

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

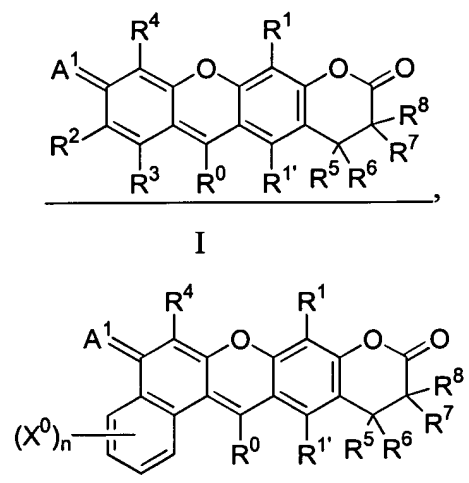
1. (Withdrawn) A method for preparing a fluorescent dye-labeled biological agent, said method comprising contacting an unlabeled biological agent with a fluorescent dye-fused lactone derivative under conditions sufficient to covalently attach the fluorescent dye to said biological agent and form a fluorescent dye-labeled biological agent.

2. (Original) A method for preparing a fluorescent dye-labeled phosphoramidite reagent, said method comprising:

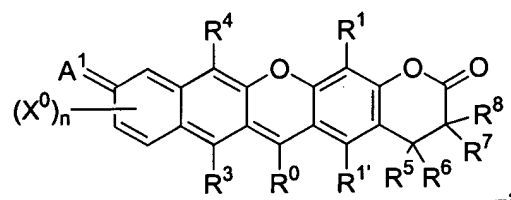
(a) contacting a fluorescent dye-fused lactone derivative with a linking group component to form an intermediate fluorescent dye-labeled linking group; and

(b) contacting said intermediate fluorescent dye-labeled linking group with a phosphoramidite moiety under conditions sufficient to covalently attach the phosphoramidite moiety to said fluorescent dye-labeled linking group and form said fluorescent dye-labeled phosphoramidite reagent.

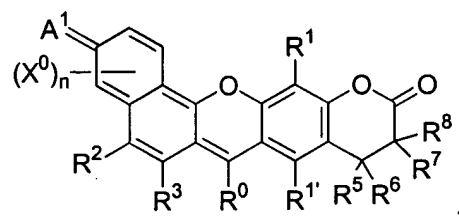
3. (Currently amended) A method in accordance with claim 2, wherein said fluorescent dye-fused lactone derivative has a formula selected from the group consisting of:



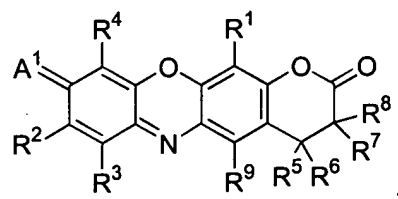
II



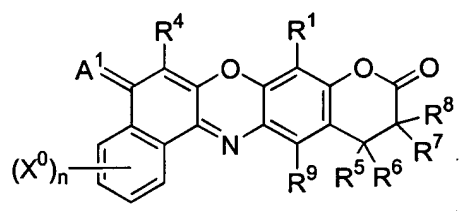
III



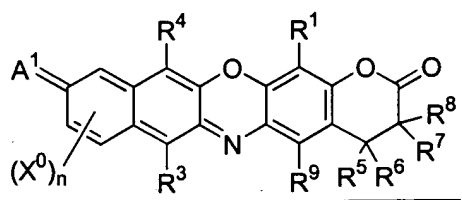
IV



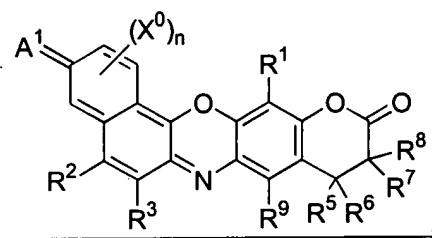
V



VI

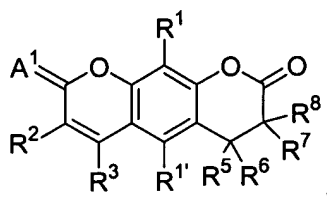


VII



VIII

and



IX

wherein

A¹ represents O or N-Z in which Z is H or (C₁-C₈)alkyl, or is optionally combined with R² or R⁴ to form a 5- or 6-membered ring or is combined with each of R² and R⁴ to form two fused 6-membered rings; or is optionally combined with and adjacent X⁰ to form a 5- or 6-membered ring or is combined with two adjacent X⁰ to form two fused 6-membered rings;

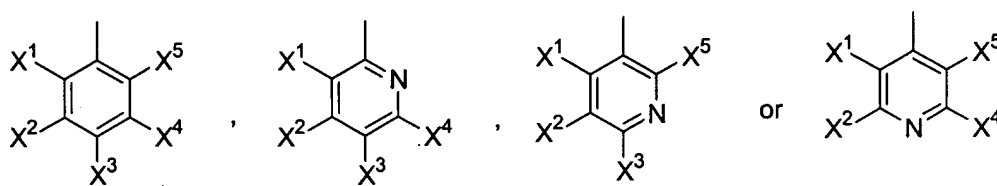
R^{1'}, R¹, R², R³ and R⁴ are each independently selected from H, halogen, cyano, CF₃, (C₁-C₈)alkyl, (C₁-C₈)alkylthio, (C₁-C₈)alkoxy, aryl and heteroaryl;

R⁵, R⁶, R⁷, R⁸ and R⁹ are each independently selected from H, (C₁-C₈)alkyl, aryl, heteroaryl, aryl(C₁-C₄)alkyl and heteroaryl(C₁-C₄)alkyl; wherein the alkyl portions of any of X⁰, R^{1'} and R¹ through R⁹ are optionally substituted with halogen, carboxy, sulfo, amino, mono- or dialkylamino, alkoxy, cyano, haloacetyl or hydroxy, and the alkyl portions of the substituents have from 1 to 6 carbon atoms; and the aryl portions of any of X⁰, R^{1'} and R¹ through R⁹ are optionally substituted with from one to four substituents selected from the group consisting of halogen, cyano, carboxy, sulfo, hydroxy, amino, mono- or di(C₁-C₆)alkylamino, (C₁-C₆)alkyl, (C₁-C₆)alkylthio and (C₁-C₆)alkoxy;

the subscript n is an integer of from 0 to 4;

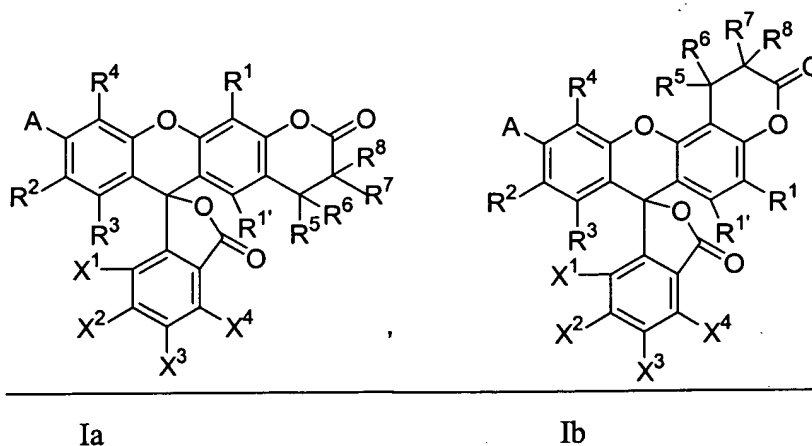
each X^0 is a member independently selected from the group consisting of H, halogen, cyano, CF_3 , (C_1-C_8) alkyl, (C_1-C_8) alkoxy, (C_1-C_8) alkylthio, (C_2-C_8) alkenyl, (C_2-C_8) alkynyl, aryl, heteroaryl, SO_3H and CO_2H ;

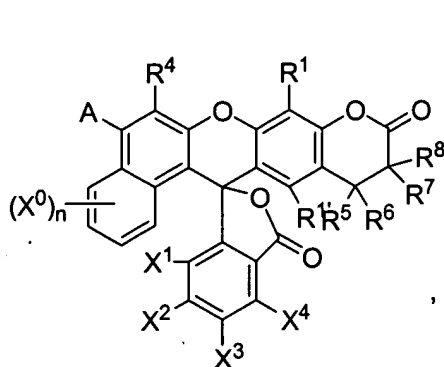
R^0 is a member selected from the group consisting of halogen, cyano, CF_3 , (C_1-C_8) alkyl, (C_2-C_8) alkenyl, (C_2-C_8) alkynyl, substituted or unsubstituted heteroaryl or aryl having the formula:



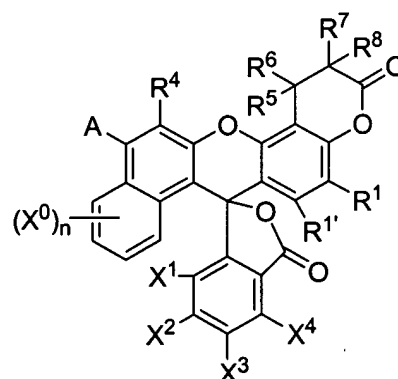
wherein X^1 , X^2 , X^3 , X^4 and X^5 are each independently selected from the group consisting of H, halogen, cyano, CF_3 , (C_1-C_8) alkyl, (C_1-C_8) alkoxy, (C_1-C_8) alkylthio, (C_2-C_8) alkenyl, (C_2-C_8) alkynyl, SO_3H and CO_2H , and optionally, any two adjacent X^1 through X^5 are combined to form an aromatic or heteroaromatic ring.

4. (Currently amended) A method in accordance with claim 2, wherein fluorescent dye-fused lactone derivative has a formula selected from the group consisting of:

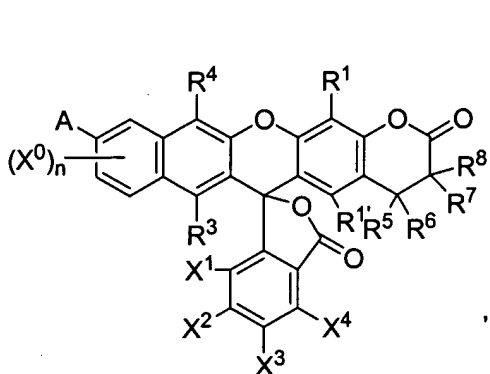




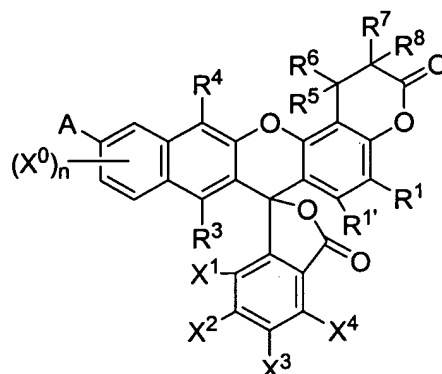
IIa



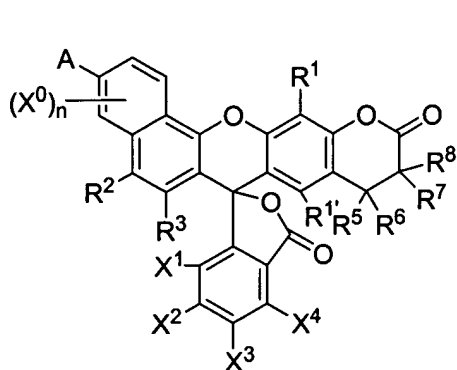
IIb



IIIa

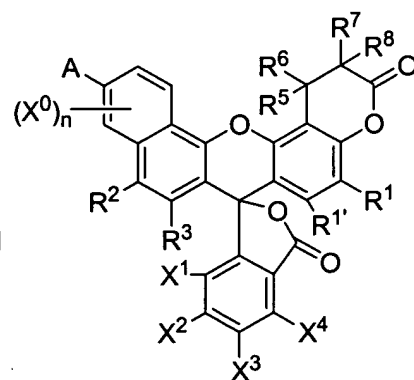


IIIb



IVa

and



IVb

V and VI

wherein

A is hydroxy, amino, protected hydroxy, or protected amino;

the subscript n is an integer of from 0 to 4;

each X⁰ is a member independently selected from the group consisting of H, halogen, cyano, CF₃, (C₁-C₈)alkyl, (C₁-C₈)alkoxy, (C₁-C₈)alkylthio, (C₂-C₈)alkenyl, (C₂-C₈)alkynyl, aryl, heteroaryl, SO₃H and CO₂H;

R^{1'}, R¹, R², R³ and R⁴ are each independently selected from H, halogen, cyano, CF₃, (C₁-C₈)alkyl, (C₁-C₈)alkylthio and (C₁-C₈)alkoxy;

R⁵, R⁶, R⁷ and R⁸ are each independently selected from H, (C₁-C₈)alkyl, aryl and aryl(C₁-C₄)alkyl; wherein the alkyl portions of any of X⁰, R^{1'} and R¹ through R⁸ are optionally substituted with halogen, carboxy, sulfo, amino, mono- or dialkylamino, alkoxy, cyano, haloacetyl or hydroxy, and the alkyl portions of the substituents have from 1 to 6 carbon atoms; and the aryl portions of any of X⁰, R^{1'} and R¹ through R⁸ are optionally substituted with from one to four substituents selected from the group consisting of halogen, cyano, carboxy, sulfo, hydroxy, amino, mono- or di(C₁-C₆)alkylamino, (C₁-C₆)alkyl, (C₁-C₆)alkylthio and (C₁-C₆)alkoxy; and

optionally, any two adjacent substituents X¹ through X⁴ can be taken together to form a fused aromatic or heteroaromatic ring that is optionally further substituted with from one to four substituents selected from halogen cyano, carboxy, sulfo, hydroxy, amino, mono- or di(C₁-C₆)alkylamino, (C₁-C₆)alkyl, (C₁-C₆)alkylthio and (C₁-C₆)alkoxy.

5. (Original) A method in accordance with claim 2, wherein said linking group component comprises two reactive functional groups selected from amino, hydroxy, hydrazino and thiol.

6. (Original) A method in accordance with claim 2, wherein said linking group is linear or cyclic or a combination thereof.

7. (Original) A method in accordance with claim 2, wherein said linking group comprises a (C₂-C₂₀)alkylene or (C₂-C₂₀)heteroalkylene group.

8. (Original) A method in accordance with claim 2, wherein said linking group is cyclic and comprises a five-membered heterocycle.

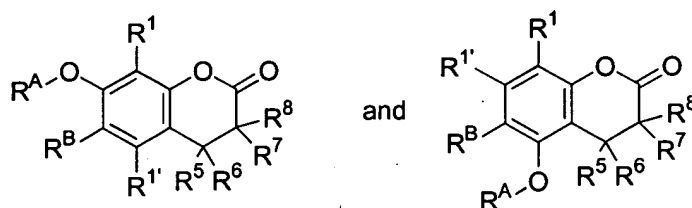
9. (Original) A method in accordance with claim 8, wherein said cyclic linking group is a prolinol linker.

10. (Withdrawn) A method in accordance with claim 1, wherein said biological agent is an oligonucleotide.

11. (Withdrawn) A method in accordance with claim 1, wherein said biological agent is an oligonucleotide having one or more modified bases.

12. (Withdrawn) A method in accordance with claim 1, wherein said fluorescent dye-fused lactone derivative is a member selected from the group consisting of coumarins, benzocoumarins, xanthenes, benzo[a]xanthenes, benzo[b]xanthenes, benzo[c]xanthenes, phenoxazines, benzo[a]phenoxazines, benzo[b]phenoxazines and benzo[c]phenoxazines.

13. (Withdrawn) A method in accordance with claim 1, wherein said fluorescent dye-fused lactone derivative has a formula selected from the group consisting of:



wherein

R¹ and R^{1'} are each members independently selected from the group consisting of H, halogen, cyano, CF₃, (C₁-C₈)alkyl, (C₁-C₈)alkylthio, (C₁-C₈)alkoxy, aryl and heteroaryl;

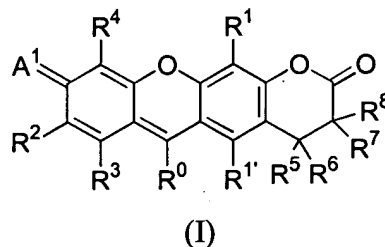
R⁵, R⁶, R⁷ and R⁸ are each independently selected from the group consisting of H, (C₁-C₈)alkyl, aryl, heteroaryl, aryl(C₁-C₄)alkyl and heteroaryl(C₁-C₄)alkyl;

wherein the alkyl portions of any of R¹, R^{1'}, and R⁵ through R⁸ are optionally substituted with halogen, carboxy, sulfo, amino, mono- or dialkylamino, alkoxy, cyano, haloacetyl or hydroxy, and the alkyl portions of the substituents have from 1 to 6 carbon atoms; and the aryl or heteroaryl portions of any of R¹, R^{1'}, and R⁵ through R⁸ are optionally substituted with from one to four substituents selected from the group consisting of halogen, cyano,

carboxy, sulfo, hydroxy, amino, mono- or di(C₁-C₆)alkylamino, (C₁-C₆)alkyl, (C₁-C₆)alkylthio and (C₁-C₆)alkoxy;

R^A and R^B are combined to form a substituted or unsubstituted fused ring system having from 1 to 4 five- or six-membered rings; with the proviso that the compound has an emission wavelength of from 400 nm to 1200 nm.

14. (Withdrawn) A method in accordance with claim 13, wherein said fluorescent dye-fused lactone derivative has the formula:



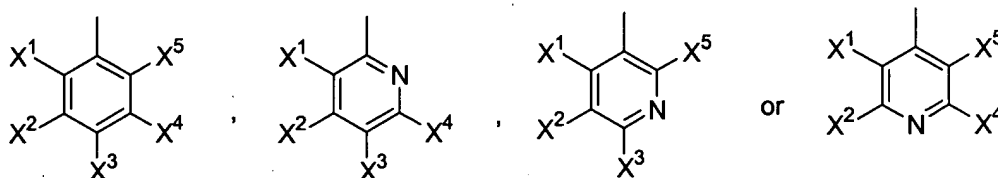
wherein

A¹ represents O or N-Z in which Z is H or (C₁-C₈)alkyl, or is optionally combined with R² or R⁴ to form a 5- or 6-membered ring or is combined with each of R² and R⁴ to form two fused 6-membered rings;

R^{1'}, R¹, R², R³ and R⁴ are each independently selected from H, halogen, cyano, CF₃, (C₁-C₈)alkyl, (C₁-C₈)alkylthio, (C₁-C₈)alkoxy, aryl and heteroaryl;

R⁵, R⁶, R⁷ and R⁸ are each independently selected from H, (C₁-C₈)alkyl, aryl, heteroaryl, aryl(C₁-C₄)alkyl and heteroaryl(C₁-C₄)alkyl; wherein the alkyl portions of any of R^{1'} and R¹ through R⁸ are optionally substituted with halogen, carboxy, sulfo, amino, mono- or dialkylamino, alkoxy, cyano, haloacetyl or hydroxy, and the alkyl portions of the substituents have from 1 to 6 carbon atoms; and the aryl portions of any of R^{1'} and R¹ through R⁸ are optionally substituted with from one to four substituents selected from the group consisting of halogen, cyano, carboxy, sulfo, hydroxy, amino, mono- or di(C₁-C₆)alkylamino, (C₁-C₆)alkyl, (C₁-C₆)alkylthio and (C₁-C₆)alkoxy;

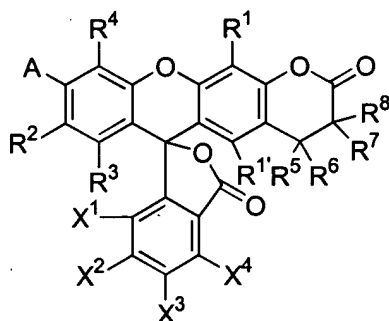
R^0 is halogen, cyano, CF_3 , (C_1-C_8) alkyl, (C_1-C_8) alkenyl, (C_1-C_8) alkynyl, substituted or unsubstituted heteroaryl or aryl having the formula:



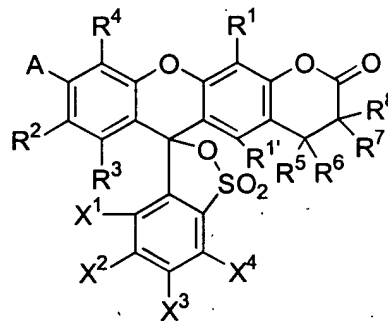
wherein X^1 , X^2 , X^3 , X^4 and X^5 are each independently selected from the group consisting of H, halogen, cyano, CF_3 , (C_1-C_8) alkyl, (C_1-C_8) alkoxy, (C_1-C_8) alkylthio, (C_1-C_8) alkenyl, (C_1-C_8) alkynyl, SO_3H and CO_2H , and optionally, any two adjacent X^1 through X^5 are combined to form an aromatic or heteroaromatic ring.

15. (Withdrawn) A method in accordance with claim 14, wherein R^1 is selected from the group consisting of H, halogen and phenyl; and each R^2 , R^3 and R^4 is independently selected from the group consisting of H and halogen.

16. (Withdrawn) A method in accordance with claim 14, wherein said fluorescent dye-fused lactone derivative has a formula selected from the group consisting of:



(Ia)



(Ib)

wherein

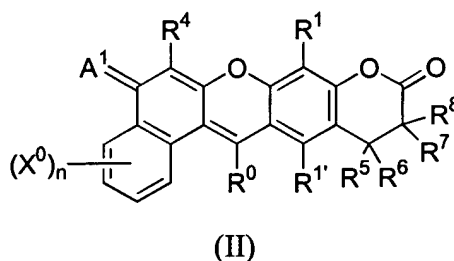
A is hydroxy, amino, protected hydroxy, or protected amino;

R^1 , R^2 , R^3 and R^4 are each independently selected from H, halogen, cyano, CF_3 , (C_1-C_8) alkyl, (C_1-C_8) alkylthio and (C_1-C_8) alkoxy;

R^5 , R^6 , R^7 and R^8 are each independently selected from H, (C₁-C₈)alkyl, aryl and aryl(C₁-C₄)alkyl; wherein the alkyl portions of any of $R^{1'}$ and R^1 through R^8 are optionally substituted with halogen, carboxy, sulfo, amino, mono- or dialkylamino, alkoxy, cyano, haloacetyl or hydroxy, and the alkyl portions of the substituents have from 1 to 6 carbon atoms; and the aryl portions of any of R^5 through R^8 are optionally substituted with from one to four substituents selected from the group consisting of halogen, cyano, carboxy, sulfo, hydroxy, amino, mono- or di(C₁-C₆)alkylamino, (C₁-C₆)alkyl, (C₁-C₆)alkylthio and (C₁-C₆)alkoxy; and optionally, any two adjacent substituents X^1 through X^4 can be taken together to form a fused aromatic or heteroaromatic ring that is optionally further substituted with from one to four substituents selected from halogen cyano, carboxy, sulfo, hydroxy, amino, mono- or di(C₁-C₆)alkylamino, (C₁-C₆)alkyl, (C₁-C₆)alkylthio and (C₁-C₆)alkoxy.

17. (Withdrawn) A method in accordance with claim 16, wherein said fluorescent dye-fused lactone derivative has formula Ia in which A is hydroxy or a protected hydroxy; R^5 through R^8 are each H; R^1 , R^2 , R^3 , R^4 and $R^{1'}$ are independently selected from the group consisting of H, halogen, cyano and CF₃.

18. (Withdrawn) A method in accordance with claim 13, wherein said fluorescent dye-fused lactone derivative has the formula:



wherein

A^1 is O or N-Z in which Z is H or (C₁-C₈)alkyl, or is optionally combined with R^4 to form a 5- or 6-membered ring;

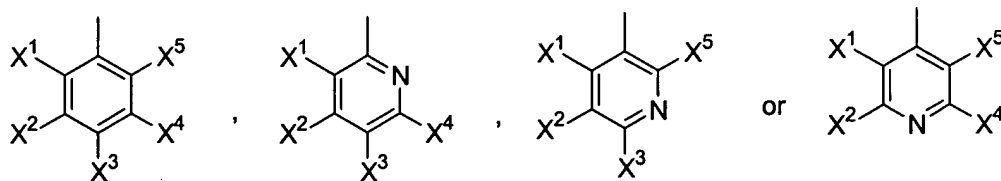
$R^{1'}$, R^1 and R^4 are each independently selected from H, halogen, cyano, CF_3 , (C_1-C_8) alkyl, (C_1-C_8) alkylthio, (C_1-C_8) alkoxy, aryl and heteroaryl;

R^5 , R^6 , R^7 and R^8 are each independently selected from H, (C_1-C_8) alkyl, aryl, heteroaryl, aryl (C_1-C_4) alkyl and heteroaryl (C_1-C_4) alkyl; wherein the alkyl portions of any of $R^{1'}$ and R^1 through R^8 are optionally substituted with halogen, carboxy, sulfo, amino, mono- or dialkylamino, alkoxy, cyano, haloacetyl or hydroxy, and the alkyl portions of the substituents have from 1 to 6 carbon atoms; and the aryl portions of any of $R^{1'}$ and R^1 through R^8 are optionally substituted with from one to four substituents selected from the group consisting of halogen, cyano, carboxy, sulfo, hydroxy, amino, mono- or di (C_1-C_6) alkylamino, (C_1-C_6) alkyl, (C_1-C_6) alkylthio and (C_1-C_6) alkoxy;

the subscript n is an integer of from 0 to 4;

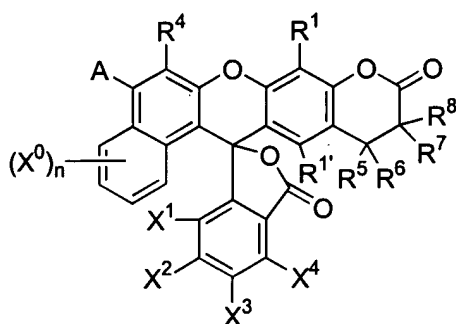
each X^0 is a member independently selected from the group consisting of H, halogen, cyano, CF_3 , (C_1-C_8) alkyl, (C_1-C_8) alkoxy, (C_1-C_8) alkylthio, (C_1-C_8) alkenyl, (C_1-C_8) alkynyl, aryl, heteroaryl, SO_3H and CO_2H ;

R^0 is halogen, cyano, CF_3 , (C_1-C_8) alkyl, (C_1-C_8) alkenyl, (C_1-C_8) alkynyl, substituted or unsubstituted heteroaryl or aryl having the formula:



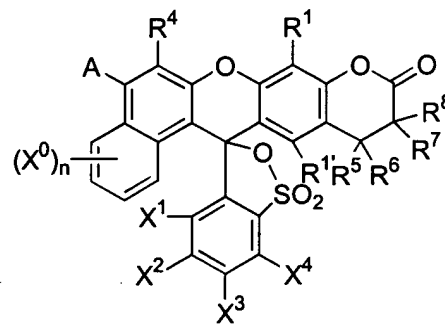
wherein X^1 , X^2 , X^3 , X^4 and X^5 are each independently selected from the group consisting of H, halogen, cyano, CF_3 , (C_1-C_8) alkyl, (C_1-C_8) alkoxy, (C_1-C_8) alkylthio, (C_1-C_8) alkenyl, (C_1-C_8) alkynyl, SO_3H and CO_2H , and optionally, any two adjacent X^1 through X^5 are combined to form an aromatic or heteroaromatic ring.

19. (Withdrawn) A method in accordance with claim 18, wherein said has a formula selected from the group consisting of:



IIa

and



IIc

wherein

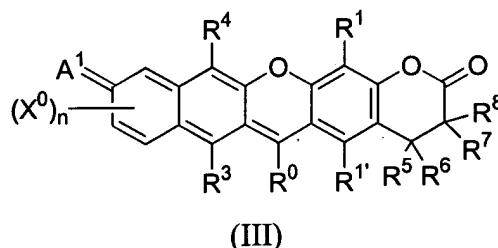
A is hydroxy, amino, protected hydroxy, or protected amino;

R^{1'}, R¹ and R⁴ are each independently selected from H, halogen, cyano, CF₃, (C₁-C₈)alkyl, (C₁-C₈)alkylthio and (C₁-C₈)alkoxy;

R⁵, R⁶, R⁷ and R⁸ are each independently selected from H, (C₁-C₈)alkyl, aryl and aryl(C₁-C₄)alkyl; wherein the alkyl portions of any of R^{1'} and R¹ through R⁸ are optionally substituted with halogen, carboxy, sulfo, amino, mono- or dialkylamino, alkoxy, cyano, haloacetyl or hydroxy, and the alkyl portions of the substituents have from 1 to 6 carbon atoms; and the aryl portions of any of R⁵ through R⁸ are optionally substituted with from one to four substituents selected from the group consisting of halogen, cyano, carboxy, sulfo, hydroxy, amino, mono- or di(C₁-C₆)alkylamino, (C₁-C₆)alkyl, (C₁-C₆)alkylthio and (C₁-C₆)alkoxy; and optionally, any two adjacent substituents X¹ through X⁴ can be taken together to form a fused aromatic or heteroaromatic ring that is optionally further substituted with from one to four substituents selected from halogen, cyano, carboxy, sulfo, hydroxy, amino, mono- or di(C₁-C₆)alkylamino, (C₁-C₆)alkyl, (C₁-C₆)alkylthio and (C₁-C₆)alkoxy.

20. (Withdrawn) A method in accordance with claim 19, wherein said fluorescent dye-fused lactone derivative has formula IIa in which A is hydroxy or a protected hydroxy; R⁵ through R⁸ are each H; R¹, R⁴ and R^{1'} are independently selected from the group consisting of H, halogen, cyano and CF₃.

21. (Withdrawn) A method in accordance with claim 12, wherein said benzo[b]xanthene has the formula:



wherein

A¹ is O or N-Z in which Z is H or (C₁-C₈)alkyl, or is optionally combined with an adjacent X⁰ to form a 5- or 6-membered ring or is combined with two adjacent X⁰ groups to form two fused 6-membered rings;

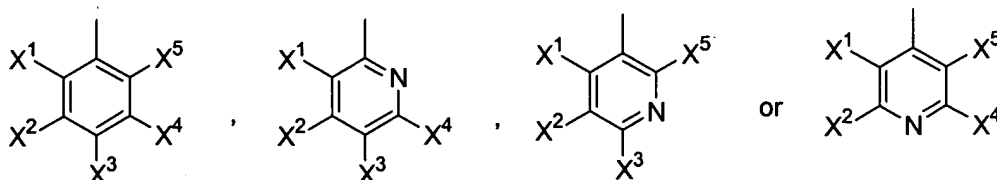
R^{1'}, R¹, R³ and R⁴ are each independently selected from H, halogen, cyano, CF₃, (C₁-C₈)alkyl, (C₁-C₈)alkylthio, (C₁-C₈)alkoxy, aryl and heteroaryl;

R⁵, R⁶, R⁷ and R⁸ are each independently selected from H, (C₁-C₈)alkyl, aryl, heteroaryl, aryl(C₁-C₄)alkyl and heteroaryl(C₁-C₄)alkyl; wherein the alkyl portions of any of R^{1'} and R¹ through R⁸ are optionally substituted with halogen, carboxy, sulfo, amino, mono- or dialkylamino, alkoxy, cyano, haloacetyl or hydroxy, and the alkyl portions of the substituents have from 1 to 6 carbon atoms; and the aryl portions of any of R^{1'} and R¹ through R⁸ are optionally substituted with from one to four substituents selected from the group consisting of halogen, cyano, carboxy, sulfo, hydroxy, amino, mono- or di(C₁-C₆)alkylamino, (C₁-C₆)alkyl, (C₁-C₆)alkylthio and (C₁-C₆)alkoxy;

the subscript n is an integer of from 0 to 4;

each X⁰ is a member independently selected from the group consisting of H, halogen, cyano, CF₃, (C₁-C₈)alkyl, (C₁-C₈)alkoxy, (C₁-C₈)alkylthio, (C₁-C₈)alkenyl, (C₁-C₈)alkynyl, aryl, heteroaryl, SO₃H and CO₂H;

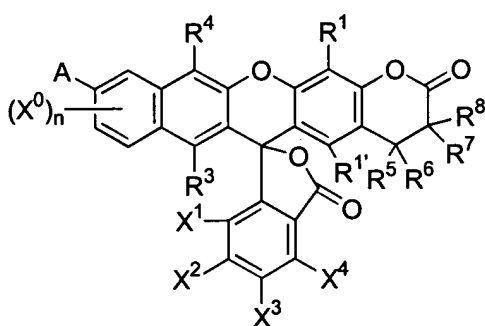
R⁰ is a member selected from the group consisting of halogen, cyano, CF₃, (C₁-C₈)alkyl, (C₁-C₈)alkenyl, (C₁-C₈)alkynyl, and substituted or unsubstituted heteroaryl or aryl having the formula:



wherein X^1 , X^2 , X^3 , X^4 and X^5 are each independently selected from the group consisting of H, halogen, cyano, CF_3 , (C_1-C_8) alkyl, (C_1-C_8) alkoxy, (C_1-C_8) alkylthio, (C_1-C_8) alkenyl, (C_1-C_8) alkynyl, SO_3H and CO_2H , and optionally, any two adjacent X^1 through X^5 are combined to form an aromatic or heteroaromatic ring.

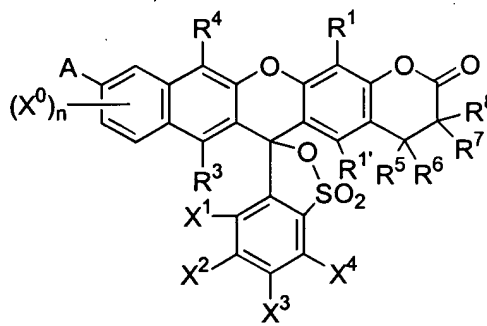
22. (Withdrawn) A method in accordance with claim 21, wherein R^1 is halogen; and each X^1 through X^4 is independently selected from the group consisting of H, F and Cl.

23. (Withdrawn) A method in accordance with claim 21, wherein said benzo[b]xanthene has a formula selected from the group consisting of:



(IIIa)

and



(IIIc)

wherein

A is hydroxy, amino, protected hydroxy, or protected amino;

the subscript n is an integer of from 0 to 3;

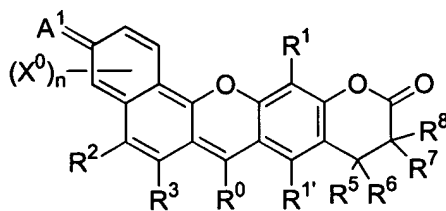
each X^0 is a member independently selected from the group consisting of H, halogen, cyano, CF_3 , (C_1-C_8) alkyl, (C_1-C_8) alkoxy, (C_1-C_8) alkylthio, (C_1-C_8) alkenyl, (C_1-C_8) alkynyl, aryl, heteroaryl, SO_3H and CO_2H ;

R^1 , R^2 , R^3 and R^4 are each independently selected from H, halogen, cyano, CF_3 , (C_1-C_8) alkyl, (C_1-C_8) alkylthio and (C_1-C_8) alkoxy;

R^5 , R^6 , R^7 and R^8 are each independently selected from H, (C₁-C₈)alkyl, aryl and aryl(C₁-C₄)alkyl; wherein the alkyl portions of any of $R^{1'}$ and R^1 through R^8 are optionally substituted with halogen, carboxy, sulfo, amino, mono- or dialkylamino, alkoxy, cyano, haloacetyl or hydroxy, and the alkyl portions of the substituents have from 1 to 6 carbon atoms; and the aryl portions of any of R^5 through R^8 are optionally substituted with from one to four substituents selected from the group consisting of halogen, cyano, carboxy, sulfo, hydroxy, amino, mono- or di(C₁-C₆)alkylamino, (C₁-C₆)alkyl, (C₁-C₆)alkylthio and (C₁-C₆)alkoxy; and optionally, any two adjacent substituents X^1 through X^4 can be taken together to form a fused aromatic or heteroaromatic ring that is optionally further substituted with from one to four substituents selected from halogen cyano, carboxy, sulfo, hydroxy, amino, mono- or di(C₁-C₆)alkylamino, (C₁-C₆)alkyl, (C₁-C₆)alkylthio and (C₁-C₆)alkoxy.

24. (Withdrawn) A method in accordance with claim 23, wherein said fluorescent dye-fused lactone derivative has formula IIIa in which A is hydroxy or a protected hydroxy; R^5 through R^8 are each H; R^1 , R^3 , R^4 and $R^{1'}$ are independently selected from the group consisting of H, halogen, cyano and CF₃.

25. (Withdrawn) A method in accordance with claim 12, wherein said benzo[c]xanthene has the formula:

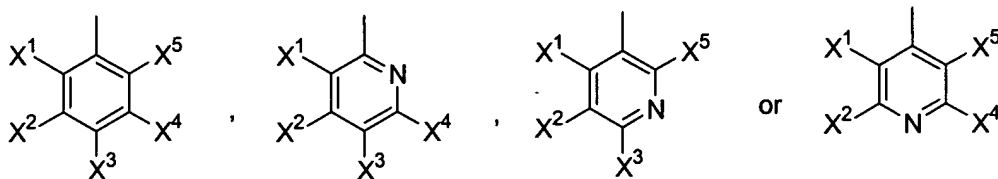


(IV)

wherein

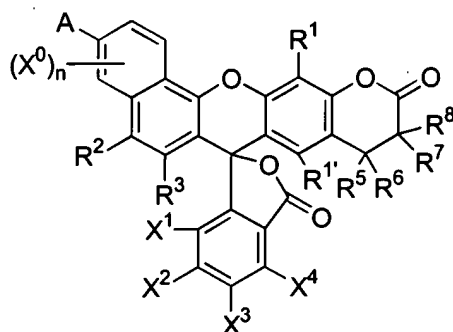
A¹ is O or N-Z in which Z is H or (C₁-C₈)alkyl, or is optionally combined with an adjacent X⁰ to form a 5- or 6-membered ring or is combined with two adjacent X⁰ groups to form two fused 6-membered rings;

$R^{1'}$, R^1 and R^4 are each independently selected from H, halogen, cyano, CF_3 , (C_1-C_8) alkyl, (C_1-C_8) alkylthio, (C_1-C_8) alkoxy, aryl and heteroaryl;
 R^5 , R^6 , R^7 and R^8 are each independently selected from H, (C_1-C_8) alkyl, aryl, heteroaryl, aryl (C_1-C_4) alkyl and heteroaryl (C_1-C_4) alkyl; wherein the alkyl portions of any of $R^{1'}$ and R^1 through R^8 are optionally substituted with halogen, carboxy, sulfo, amino, mono- or dialkylamino, alkoxy, cyano, haloacetyl or hydroxy, and the alkyl portions of the substituents have from 1 to 6 carbon atoms; and the aryl portions of any of $R^{1'}$ and R^1 through R^8 are optionally substituted with from one to four substituents selected from the group consisting of halogen, cyano, carboxy, sulfo, hydroxy, amino, mono- or di (C_1-C_6) alkylamino, (C_1-C_6) alkyl, (C_1-C_6) alkylthio and (C_1-C_6) alkoxy;
the subscript n is an integer of from 0 to 3;
each X^0 is a member independently selected from the group consisting of H, halogen, cyano, CF_3 , (C_1-C_8) alkyl, (C_1-C_8) alkoxy, (C_1-C_8) alkylthio, (C_1-C_8) alkenyl, (C_1-C_8) alkynyl, aryl, heteroaryl, SO_3H and CO_2H ;
 R^0 is halogen, cyano, CF_3 , (C_1-C_8) alkyl, (C_1-C_8) alkenyl, (C_1-C_8) alkynyl, substituted or unsubstituted heteroaryl or aryl having the formula:

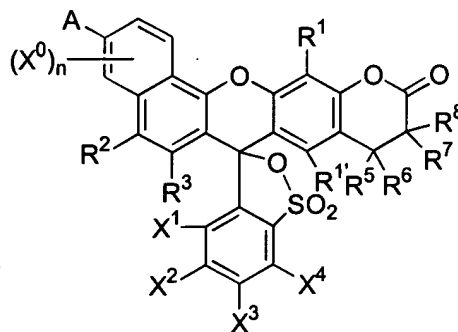


wherein X^1 , X^2 , X^3 , X^4 and X^5 are each independently selected from the group consisting of H, halogen, cyano, CF_3 , (C_1-C_8) alkyl, (C_1-C_8) alkoxy, (C_1-C_8) alkylthio, (C_1-C_8) alkenyl, (C_1-C_8) alkynyl, SO_3H and CO_2H , and optionally, any two adjacent X^1 through X^5 are combined to form an aromatic or heteroaromatic ring.

26. (Withdrawn) A method in accordance with claim 25, wherein said benzo[c]xanthene has a formula selected from the group consisting of:



(IVa)



(IVc)

wherein

A is hydroxy, amino, protected hydroxy, or protected amino;

the subscript n is an integer of from 0 to 3;

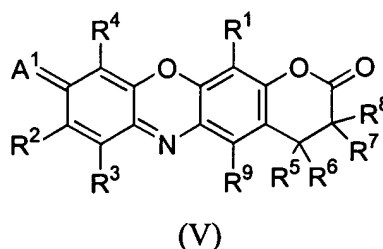
each X^0 is a member independently selected from the group consisting of H, halogen, cyano, CF_3 , (C_1-C_8) alkyl, (C_1-C_8) alkoxy, (C_1-C_8) alkylthio, (C_1-C_8) alkenyl, (C_1-C_8) alkynyl, aryl, heteroaryl, SO_3H and CO_2H ;

$R^{1'}$, R^1 , R^3 and R^4 are each independently selected from H, halogen, cyano, CF_3 , (C_1-C_8) alkyl, (C_1-C_8) alkylthio and (C_1-C_8) alkoxy;

R^5 , R^6 , R^7 and R^8 are each independently selected from H, (C_1-C_8) alkyl, aryl and aryl (C_1-C_4) alkyl; wherein the alkyl portions of any of $R^{1'}$ and R^1 through R^8 are optionally substituted with halogen, carboxy, sulfo, amino, mono- or dialkylamino, alkoxy, cyano, haloacetyl or hydroxy, and the alkyl portions of the substituents have from 1 to 6 carbon atoms; and the aryl portions of any of R^5 through R^8 are optionally substituted with from one to four substituents selected from the group consisting of halogen, cyano, carboxy, sulfo, hydroxy, amino, mono- or di (C_1-C_6) alkylamino, (C_1-C_6) alkyl, (C_1-C_6) alkylthio and (C_1-C_6) alkoxy; and optionally, any two adjacent substituents X^1 through X^4 can be taken together to form a fused aromatic or heteroaromatic ring that is optionally further substituted with from one to four substituents selected from halogen cyano, carboxy, sulfo, hydroxy, amino, mono- or di (C_1-C_6) alkylamino, (C_1-C_6) alkyl, (C_1-C_6) alkylthio and (C_1-C_6) alkoxy.

27. (Withdrawn) A method in accordance with claim 26, wherein said fluorescent dye-fused lactone derivative has formula IIa in which A is hydroxy or a protected hydroxy; R⁵ through R⁸ are each H; R¹, R², R³ and R^{1'} are independently selected from the group consisting of H, halogen, cyano and CF₃.

28. (Withdrawn) A method in accordance with claim 12, wherein said phenoxazine has the formula:



wherein

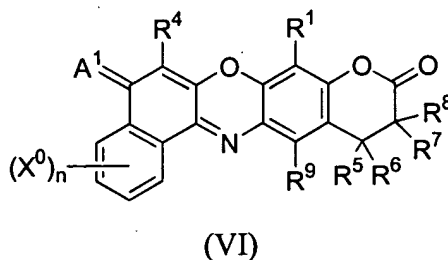
A¹ is O or N-Z in which Z is H or (C₁-C₈)alkyl, or is optionally combined with R² or R⁴ to form a 5- or 6-membered ring or is combined with each of R² and R⁴ to form two fused 6-membered rings;

R¹, R², R³, R⁴ and R⁹ are each independently selected from the group consisting of H, halogen, cyano, CF₃, (C₁-C₈)alkyl, (C₁-C₈)alkylthio, (C₁-C₈)alkoxy, aryl and heteroaryl;

R⁵, R⁶, R⁷ and R⁸ are each independently selected from H, (C₁-C₈)alkyl, aryl, heteroaryl, aryl(C₁-C₄)alkyl and heteroaryl(C₁-C₄)alkyl; wherein the alkyl portions of any of R¹ through R⁹ are optionally substituted with halogen, carboxy, sulfo, amino, mono- or dialkylamino, alkoxy, cyano, haloacetyl or hydroxy, and the alkyl portions of the substituents have from 1 to 6 carbon atoms; and the aryl portions of any of R¹ through R⁹ are optionally substituted with from one to four substituents selected from the group consisting of halogen, cyano, carboxy, sulfo, hydroxy, amino, mono- or di(C₁-C₆)alkylamino, (C₁-C₆)alkyl, (C₁-C₆)alkylthio and (C₁-C₆)alkoxy.

29. (Withdrawn) A method in accordance with claim 28, wherein said fluorescent dye-fused lactone derivative has formula V in which A¹ is O; R⁵ through R⁸ are each H; R¹ through R⁴ and R⁹ are independently selected from the group consisting of H, halogen, cyano and CF₃.

30. (Withdrawn) A method in accordance with claim 12, wherein said benzo[a]phenoxazines have the formula:



wherein

A¹ is O or N-Z in which Z is H or (C₁-C₈)alkyl, or is optionally combined with R⁴ to form a 5- or 6-membered ring;

R¹, R⁴ and R⁹ are each independently selected from the group consisting of H, halogen, cyano, CF₃, (C₁-C₈)alkyl, (C₁-C₈)alkylthio, (C₁-C₈)alkoxy, aryl and heteroaryl;

R⁵, R⁶, R⁷ and R⁸ are each independently selected from the group consisting of H, (C₁-C₈)alkyl, aryl, heteroaryl, aryl(C₁-C₄)alkyl and heteroaryl(C₁-C₄)alkyl;

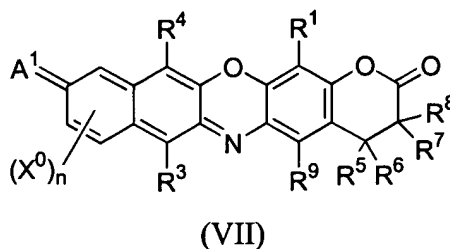
wherein the alkyl portions of any of R¹ through R⁹ are optionally substituted with halogen, carboxy, sulfo, amino, mono- or dialkylamino, alkoxy, cyano, haloacetyl or hydroxy, and the alkyl portions of the substituents have from 1 to 6 carbon atoms; and the aryl portions of any of R¹ through R⁹ are optionally substituted with from one to four substituents selected from the group consisting of halogen, cyano, carboxy, sulfo, hydroxy, amino, mono- or di(C₁-C₆)alkylamino, (C₁-C₆)alkyl, (C₁-C₆)alkylthio and (C₁-C₆)alkoxy;

the subscript n is an integer of from 0 to 4; and

each X⁰ is independently selected from the group consisting of H, halogen, cyano, CF₃, (C₁-C₈)alkyl, (C₁-C₈)alkoxy, (C₁-C₈)alkylthio, (C₂-C₈)alkenyl, (C₂-C₈)alkynyl, aryl, heteroaryl, SO₃H and CO₂H.

31. (Withdrawn) A method in accordance with claim 30, wherein said fluorescent dye-fused lactone derivative has formula VI in which A¹ is O; R⁵ through R⁸ are each H; R¹, R⁴ and R⁹ are independently selected from the group consisting of H, halogen, cyano and CF₃.

32. (Withdrawn) A method in accordance with claim 12, wherein said benzo[b]phenoxazines have the formula:



wherein

A¹ is O or N-Z in which Z is H or (C₁-C₈)alkyl, or is optionally combined with an adjacent X⁰ to form a 5- or 6-membered ring or is combined with two adjacent X⁰ groups to form two fused 6-membered rings;

R¹, R³, R⁴ and R⁹ are each independently selected from H, halogen, cyano, CF₃, (C₁-C₈)alkyl, (C₁-C₈)alkylthio, (C₁-C₈)alkoxy, aryl and heteroaryl;

R⁵, R⁶, R⁷ and R⁸ are each independently selected from the group consisting of H, (C₁-C₈)alkyl, aryl, heteroaryl, aryl(C₁-C₄)alkyl and heteroaryl(C₁-C₄)alkyl;

wherein the alkyl portions of any of R¹ or R³ through R⁹ are optionally substituted with halogen, carboxy, sulfo, amino, mono- or dialkylamino, alkoxy, cyano, haloacetyl or hydroxy, and the alkyl portions of the substituents have from 1 to 6 carbon atoms; and the aryl or heteroaryl portions of any of R¹ and R³ through R⁹ are optionally substituted with from one to four substituents selected from the group consisting of halogen, cyano, carboxy, sulfo, hydroxy, amino, mono- or di(C₁-C₆)alkylamino, (C₁-C₆)alkyl, (C₁-C₆)alkylthio and (C₁-C₆)alkoxy;

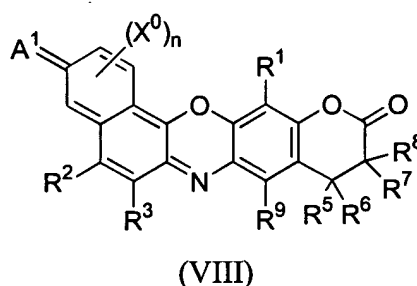
each X⁰ is independently selected from the group consisting of H, halogen, cyano, CF₃, (C₁-C₈)alkyl, (C₁-C₈)alkoxy, (C₁-C₈)alkylthio, (C₁-C₈)alkenyl, (C₁-C₈)alkynyl,

aryl, heteroaryl, SO₃H and CO₂H. Additionally, the alkyl portions of any X⁰ can be further substituted with halogen, carboxy, sulfo, amino, mono- or dialkylamino, alkoxy, cyano, haloacetyl or hydroxy, and the alkyl portions of the substituents have from 1 to 6 carbon atoms; and

the subscript n is an integer of from 0 to 3.

33. (Withdrawn) A method in accordance with claim 32, wherein said fluorescent dye-fused lactone derivative has formula VII in which A¹ is O; R⁵ through R⁸ are each H; R¹, R³, R⁴ and R⁹ are independently selected from the group consisting of H, halogen, cyano and CF₃.

34. (Withdrawn) A method in accordance with claim 12, wherein said benzo[c]phenoxazines have the formula:



wherein

A¹ is O or N-Z in which Z is H or (C₁-C₈)alkyl, or is optionally combined with an adjacent X⁰ to form a 5- or 6-membered ring or is combined with two adjacent X⁰ groups to form two fused 6-membered rings;

R¹, R², R³ and R⁹ are each independently selected from H, halogen, cyano, CF₃, (C₁-C₈)alkyl, (C₁-C₈)alkylthio, (C₁-C₈)alkoxy, aryl and heteroaryl;

R⁵, R⁶, R⁷ and R⁸ are each independently selected from the group consisting of H, (C₁-C₈)alkyl, aryl, heteroaryl, aryl(C₁-C₄)alkyl and heteroaryl(C₁-C₄)alkyl;

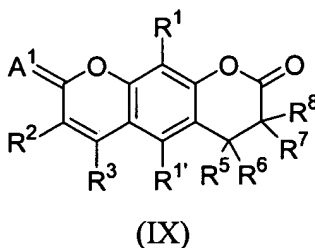
wherein the alkyl portions of any of R¹, R², R³ or R⁵ through R⁹ are optionally substituted with halogen, carboxy, sulfo, amino, mono- or dialkylamino, alkoxy, cyano, haloacetyl or hydroxy, and the alkyl portions of the substituents have from 1 to 6 carbon atoms; and the aryl or heteroaryl portions

of any of R^1 , R^2 , R^3 or R^5 through R^9 are optionally substituted with from one to four substituents selected from the group consisting of halogen, cyano, carboxy, sulfo, hydroxy, amino, mono- or di(C_1 - C_6)alkylamino, (C_1 - C_6)alkyl, (C_1 - C_6)alkylthio and (C_1 - C_6)alkoxy;

each X^0 is independently selected from the group consisting of H, halogen, cyano, CF_3 , (C_1 - C_8)alkyl, (C_1 - C_8)alkoxy, (C_1 - C_8)alkylthio, (C_1 - C_8)alkenyl, (C_1 - C_8)alkynyl, aryl, heteroaryl, SO_3H and CO_2H , wherein the alkyl or aryl portions of any X^0 can be further substituted with halogen, carboxy, sulfo, amino, mono- or dialkylamino, alkoxy, cyano, haloacetyl or hydroxy, and the alkyl portions of the substituents have from 1 to 6 carbon atoms; and
the subscript n is an integer of from 0 to 3.

35. (Withdrawn) A method in accordance with claim 34, wherein said fluorescent dye-fused lactone derivative has formula VIII in which A^1 is O; R^5 through R^8 are each H; R^1 , R^2 , R^3 and R^9 are independently selected from the group consisting of H, halogen, cyano and CF_3 .

36. (Withdrawn) A method in accordance with claim 13, wherein said substituted coumarin has the formula:



wherein

R^1 , $R^{1'}$, R^2 and R^3 are each independently selected from the group consisting of H, halogen, cyano, CF_3 , (C_1 - C_8)alkyl, (C_1 - C_8)alkylthio, (C_1 - C_8)alkoxy, aryl and heteroaryl;

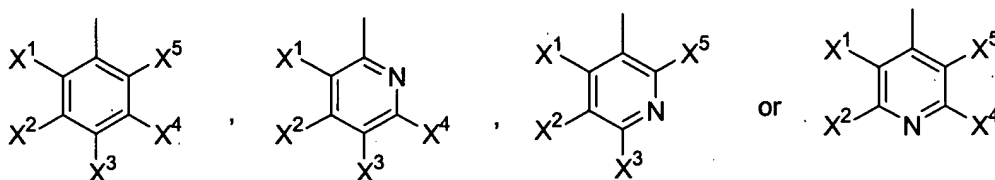
R^5 , R^6 , R^7 and R^8 are each independently selected from the group consisting of H, (C_1 - C_8)alkyl, aryl, heteroaryl, aryl(C_1 - C_4)alkyl and heteroaryl(C_1 - C_4)alkyl;

wherein the alkyl portions of any of $R^{1'}$ or R^1 through R^8 are optionally substituted with halogen, carboxy, sulfo, amino, mono- or dialkylamino, alkoxy, cyano, haloacetyl or hydroxy, and the alkyl portions of the substituents have from 1 to 6 carbon atoms; and the aryl or heteroaryl portions of any of $R^{1'}$ and R^1 through R^8 are optionally substituted with from one to four substituents selected from the group consisting of halogen, cyano, carboxy, sulfo, hydroxy, amino, mono- or di(C_1 - C_6)alkylamino, (C_1 - C_6)alkyl, (C_1 - C_6)alkylthio and (C_1 - C_6)alkoxy, or optionally, R^2 and R^3 are taken together to form a fused aromatic ring;

A^1 represents O or N-Z, in which Z is H or (C_1 - C_8)alkyl.

37. (Withdrawn) A method in accordance with claim 36, wherein R^1 is H or halogen; R^3 is (C_1 - C_4)alkyl; and $R^{1'}$ and R^2 are each hydrogen.

38. (Withdrawn) A method in accordance with claim 36, wherein R^2 and R^3 are independently selected from halogen, cyano, CF_3 , (C_1 - C_8)alkyl, and aryl or heteroaryl having the formula:

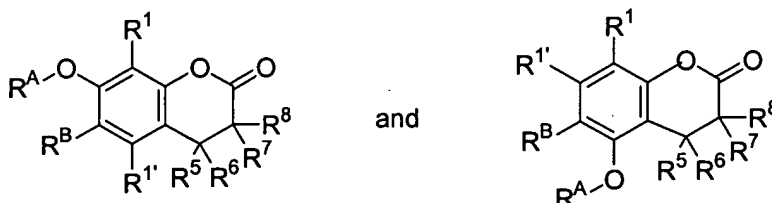


wherein

X^1 , X^2 , X^3 , X^4 and X^5 are each independently selected from the group consisting of H, halogen, cyano, CF_3 , (C_1 - C_8)alkyl, (C_1 - C_8)alkoxy, (C_1 - C_8)alkylthio, (C_1 - C_8)alkenyl, (C_1 - C_8)alkynyl, SO_3H and CO_2H , wherein the alkyl portions of any of X^1 through X^5 can be further substituted with halogen, carboxy, sulfo, amino, mono- or dialkylamino, alkoxy, cyano, haloacetyl or hydroxy, and the alkyl portions of the substituents have from 1 to 6 carbon atoms, and optionally, any two adjacent substituents X^1 through X^5 can be taken together to form a fused aromatic ring that is optionally further substituted with from one to four

substituents selected from halogen cyano, carboxy, sulfo, hydroxy, amino, mono- or di(C₁-C₆)alkylamino, (C₁-C₆)alkyl, (C₁-C₆)alkylthio and (C₁-C₆)alkoxy.

39. (Withdrawn) A fused lactone dye having a formula selected from:



wherein

R¹ and R^{1'} are each members independently selected from the group consisting of H, halogen, cyano, CF₃, (C₁-C₈)alkyl, (C₁-C₈)alkylthio, (C₁-C₈)alkoxy, aryl and heteroaryl;

R⁵, R⁶, R⁷ and R⁸ are each independently selected from the group consisting of H, (C₁-C₈)alkyl, aryl, heteroaryl, aryl(C₁-C₄)alkyl and heteroaryl(C₁-C₄)alkyl;

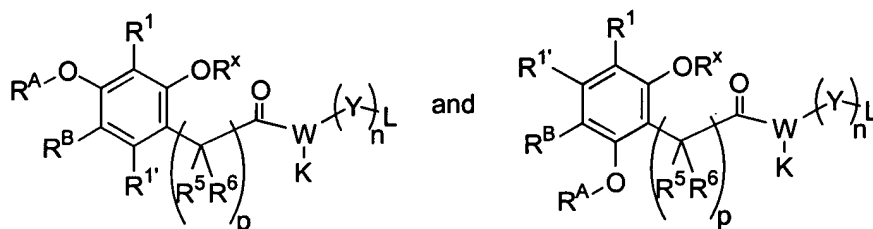
wherein the alkyl portions of any of R¹, R^{1'}, and R⁵ through R⁸ are optionally substituted with halogen, carboxy, sulfo, amino, mono- or dialkylamino, alkoxy, cyano, haloacetyl or hydroxy, and the alkyl portions of the substituents have from 1 to 6 carbon atoms; and the aryl or heteroaryl portions of any of R¹, R^{1'}, and R⁵ through R⁸ are optionally substituted with from one to four substituents selected from the group consisting of halogen, cyano, carboxy, sulfo, hydroxy, amino, mono- or di(C₁-C₆)alkylamino, (C₁-C₆)alkyl, (C₁-C₆)alkylthio and (C₁-C₆)alkoxy;

R^A and R^B are combined to form a substituted or unsubstituted fused ring system having from 1 to 4 five- or six-membered rings; with the proviso that the compound has an emission wavelength of from 400 nm to 1200 nm.

40. (Withdrawn) A fused-lactone dye of claim 39, having a formula selected from the group consisting of formula I, II, III, IV, V, VI, VII, VIII and IX.

41. (Withdrawn) A fused-lactone dye of claim 39, having a formula selected from the group consisting of formula Ia, Ib, IIa, IIb, IIIa, IIIb, IVa, IVb, V and VI.

42. (Withdrawn) A dye reagent having a formula selected from:



wherein

R^1 and $R^{1'}$ are each members independently selected from the group consisting of H, halogen, cyano, CF_3 , (C_1-C_8) alkyl, (C_1-C_8) alkylthio, (C_1-C_8) alkoxy, aryl and heteroaryl;

each R^5 and R^6 is independently selected from the group consisting of H, (C_1-C_8) alkyl, aryl, heteroaryl, aryl (C_1-C_4) alkyl and heteroaryl (C_1-C_4) alkyl;

wherein the alkyl portions of any of R^1 , $R^{1'}$, R^5 and R^6 are optionally substituted with halogen, carboxy, sulfo, amino, mono- or dialkylamino, alkoxy, cyano, haloacetyl or hydroxy, and the alkyl portions of the substituents have from 1 to 6 carbon atoms; and the aryl or heteroaryl portions of any of R^1 , $R^{1'}$, R^5 and R^6 are optionally substituted with from one to four substituents selected from the group consisting of halogen, cyano, carboxy, sulfo, hydroxy, amino, mono- or di (C_1-C_6) alkylamino, (C_1-C_6) alkyl, (C_1-C_6) alkylthio and (C_1-C_6) alkoxy;

R^A and R^B are combined to form a substituted or unsubstituted fused ring system having from 1 to 4 five- or six-membered rings;

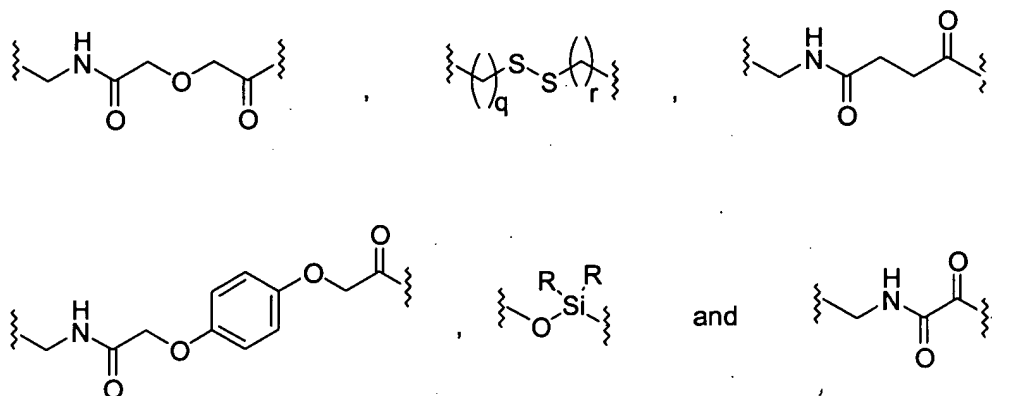
R^x is selected from the group consisting of H and hydroxy protecting groups;

the subscript p is an integer of from 1 to 3;

W is a di-, tri- or tetravalent linker which is acyclic, cyclic, aromatic or a combination thereof, having from 4 to 50 atoms selected from the group consisting of C, N, O, P and S and exclusive of hydrogen atoms that fill available valences, and further having a nitrogen atom directly connected to the adjacent carbonyl group;

K is selected from the group consisting of a lone pair of electrons, H, OH, SH, NH, (C₁-C₈)alkyl, aryl, an amino protecting group and a hydroxy protecting group; the subscript n is 0 or 1; and when n is 1, Y is a cleavable linking group and L is a solid support; and when n is 0, L is a phosphoramidite or reactive functional group the subscript p is an integer of from 1 to 3; with the proviso that the reagent has an emission wavelength of from 400 to 1200 nm.

43. (Withdrawn) A dye reagent in accordance with claim 42, wherein n is 1, and Y is selected from the group consisting of:

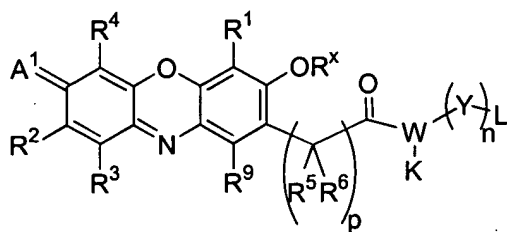


wherein the subscripts q and r are independently integers of from 1 to 15; and each R is independently (C₁-C₈)alkyl or (C₁-C₈)alkoxy.

44. (Withdrawn) A dye reagent in accordance with claim 42, wherein said reagent has an emission wavelength of from 400 nm to about 850nm.

45. (Withdrawn) A dye reagent in accordance with claim 42, wherein R^A, R^B and the ring to which each is attached forms a dye selected from the group consisting of a fluorescein, a benzocoumarin, a xanthene, a benzo[a]xanthene, a benzo[b]xanthene, a benzo[c]xanthene, a phenoxazine, a benzo[a]phenoxazine, a benzo[b]phenoxazine and a benzo[c]phenoxazine.

46. (Withdrawn) A dye reagent in accordance with claim 45, having the formula:

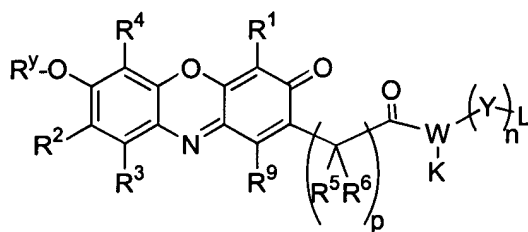


(XIIa)

wherein

- A¹ is O or N-Z in which Z is H or (C₁-C₈)alkyl;
- R¹, R², R³, R⁴ and R⁹ are each independently selected from the group consisting of H, halogen, cyano, CF₃, (C₁-C₈)alkyl, (C₁-C₈)alkylthio, (C₁-C₈)alkoxy, aryl and heteroaryl;
- each R⁵ and R⁶ is independently selected from the group consisting of H, (C₁-C₈)alkyl, aryl, heteroaryl, aryl(C₁-C₄)alkyl and heteroaryl(C₁-C₄)alkyl;
- wherein the alkyl portions of any of R¹ through R⁹ are optionally substituted with halogen, carboxy, sulfo, amino, mono- or dialkylamino, alkoxy, cyano, haloacetyl or hydroxy, and the alkyl portions of the substituents have from 1 to 6 carbon atoms; and the aryl portions of any of R¹ through R⁹ are optionally substituted with from one to four substituents selected from the group consisting of halogen, cyano, carboxy, sulfo, hydroxy, amino, mono- or di(C₁-C₆)alkylamino, (C₁-C₆)alkyl, (C₁-C₆)alkylthio and (C₁-C₆)alkoxy;
- optionally, R² taken together with R³ form a fused aromatic ring that is optionally substituted with from one to four substituents selected from halogen cyano, carboxy, sulfo, hydroxy, amino, mono- or di(C₁-C₆)alkylamino, (C₁-C₆)alkyl, (C₁-C₆)alkylthio and (C₁-C₆)alkoxy;
- and tautomeric forms thereof.

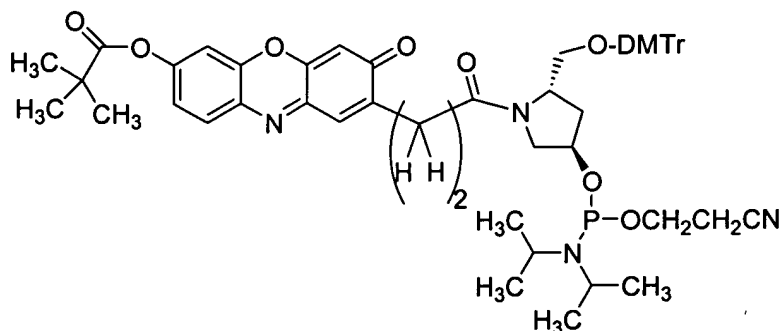
47. (Withdrawn) A dye reagent in accordance with claim 46, having the formula:



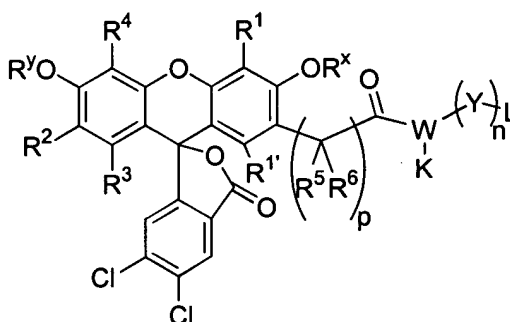
(XIIc)

wherein R^y is a protecting group.

48. (Withdrawn) A dye reagent of claim 47, having the formula:



49. (Withdrawn) A 5,6-dichlorofluorescein dye reagent having the formula:



wherein

R^x and R^y are H or independently selected protecting groups;

R^{1'}, R¹, R², R³ and R⁴ are each independently selected from the group consisting of H, halogen, cyano, CF₃, (C₁-C₈)alkyl, (C₁-C₈)alkylthio, (C₁-C₈)alkoxy, aryl and heteroaryl;

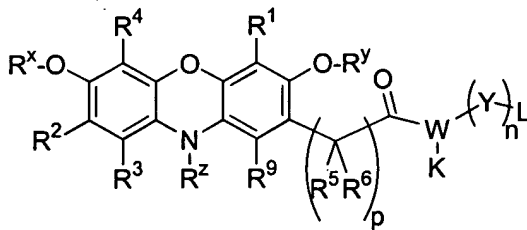
each R⁵ and R⁶ is independently selected from the group consisting of H, (C₁-C₈)alkyl, aryl, heteroaryl, aryl(C₁-C₄)alkyl and heteroaryl(C₁-C₄)alkyl;
wherein the alkyl portions of any of R^{1'} and R¹ through R⁶ are optionally substituted with halogen, carboxy, sulfo, amino, mono- or dialkylamino, alkoxy, cyano, haloacetyl or hydroxy, and the alkyl portions of the substituents have from 1 to 6 carbon atoms; and the aryl portions of any of R^{1'} and R¹ through R⁶ are optionally substituted with from one to four substituents selected from the group consisting of halogen, cyano, carboxy, sulfo, hydroxy, amino, mono- or di(C₁-C₆)alkylamino, (C₁-C₆)alkyl, (C₁-C₆)alkylthio and (C₁-C₆)alkoxy; optionally, R² taken together with R³ form a fused aromatic or heteroaromatic ring that is optionally substituted with from one to four substituents selected from halogen cyano, carboxy, sulfo, hydroxy, amino, mono- or di(C₁-C₆)alkylamino, (C₁-C₆)alkyl, (C₁-C₆)alkylthio and (C₁-C₆)alkoxy;
the subscript p is an integer of from 1 to 3;
W is a di-, tri- or tetra-valent linker which is acyclic, cyclic, aromatic or a combination thereof, having from 4 to 50 atoms selected from the group consisting of C, N, O, P and S and exclusive of hydrogen atoms that fill available valences, and further having a nitrogen atom directly connected to the adjacent carbonyl group;
K is selected from the group consisting of a lone pair of electrons, H, OH, SH, NH, (C₁-C₈)alkyl, aryl, an amino protecting group and a hydroxy protecting group;
the subscript n is 0 or 1; and when n is 1, Y is a cleavable linking group and L is a solid support; and when n is 0, L is a phosphoramidite or reactive functional group the subscript p is an integer of from 1 to 3;
and tautomeric forms thereof.

50. (Withdrawn) A 5,6-dichlorofluorescein dye reagent in accordance with claim 49, wherein R¹ is Cl; R⁵ and R⁶ are H; and the subscript p is 2.

51. (Withdrawn) A 5,6-dichlorofluorescein dye reagent in accordance with claim 50, having a formula selected from:



52. (Withdrawn) A leuco-phenoxazine dye reagent having the formula:



wherein

each of R^x , R^y and R^z are protecting groups;

R¹, R², R³, R⁴ and R⁹ are each independently selected from the group consisting of H, halogen, cyano, CF₃, (C₁-C₈)alkyl, (C₁-C₈)alkylthio, (C₁-C₈)alkoxy, aryl and heteroaryl;

each R⁵ and R⁶ is independently selected from the group consisting of H, (C₁-C₈)alkyl, aryl, heteroaryl, aryl(C₁-C₄)alkyl and heteroaryl(C₁-C₄)alkyl;

wherein the alkyl portions of any of R¹ through R⁹ are optionally substituted with halogen, carboxy, sulfo, amino, mono- or dialkylamino, alkoxy, cyano, haloacetyl or hydroxy, and the alkyl portions of the substituents have from 1 to 6 carbon atoms; and the aryl portions of any of R¹ through R⁹ are optionally substituted with from one to four substituents selected from the group consisting of halogen,

cyano, carboxy, sulfo, hydroxy, amino, mono- or di(C₁-C₆)alkylamino, (C₁-C₆)alkyl, (C₁-C₆)alkylthio and (C₁-C₆)alkoxy;

optionally, R² taken together with R³ form a fused aromatic ring that is optionally substituted with from one to four substituents selected from halogen cyano, carboxy, sulfo, hydroxy, amino, mono- or di(C₁-C₆)alkylamino, (C₁-C₆)alkyl, (C₁-C₆)alkylthio and (C₁-C₆)alkoxy;

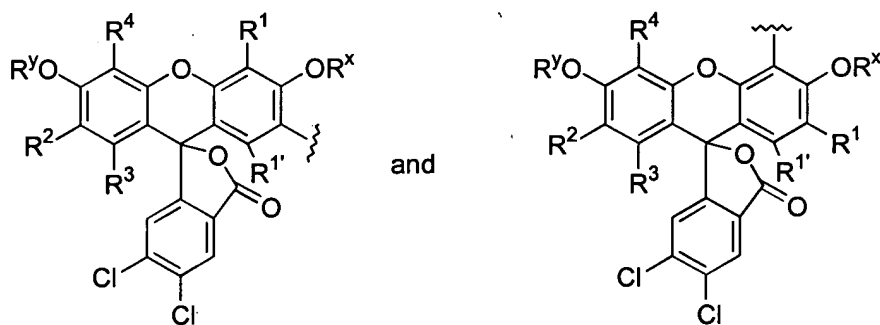
the subscript p is an integer of from 1 to 3;

W is a di-, tri- or tetra-valent linker which is acyclic, cyclic, aromatic or a combination thereof, having from 4 to 50 atoms selected from the group consisting of C, N, O, P and S and exclusive of hydrogen atoms that fill available valences, and further having a nitrogen atom directly connected to the adjacent carbonyl group;

K is selected from the group consisting of a lone pair of electrons, H, OH, SH, NH, (C₁-C₈)alkyl, aryl, an amino protecting group and a hydroxy protecting group;

the subscript n is 0 or 1; and when n is 1, Y is a cleavable linking group and L is a solid support; and when n is 0, L is a phosphoramidite or reactive functional group the subscript p is an integer of from 1 to 3.

53. (Withdrawn) An oligonucleotide probe having an attached 5,6-dichlorofluorescein dye selected from the formulae:



wherein,

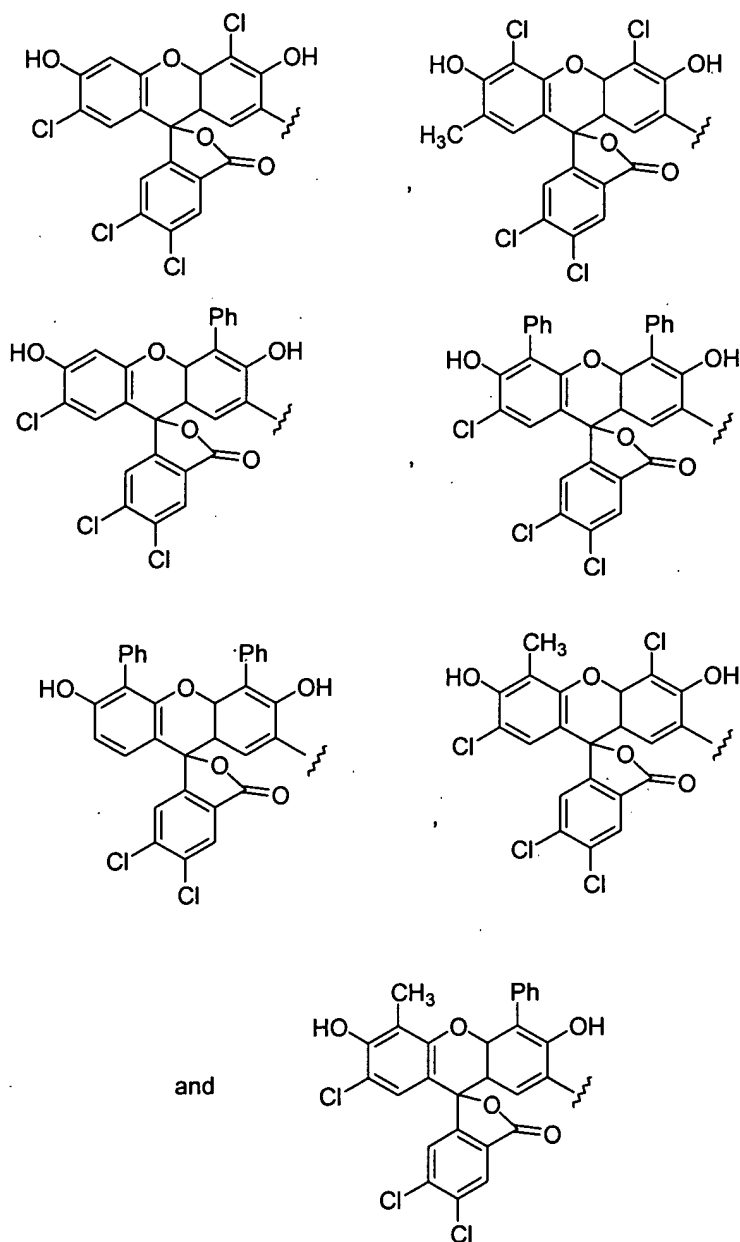
R^x and R^y are H or independently selected protecting groups;

$R^{1'}$, R^1 , R^2 , R^3 and R^4 are each independently selected from the group consisting of H, halogen, cyano, CF_3 , (C_1-C_8) alkyl, (C_1-C_8) alkylthio, (C_1-C_8) alkoxy, aryl and heteroaryl;

wherein the alkyl portions of any of $R^{1'}$ and R^1 through R^4 are optionally substituted with halogen, carboxy, sulfo, amino, mono- or dialkylamino, alkoxy, cyano, haloacetyl or hydroxy, and the alkyl portions of the substituents have from 1 to 6 carbon atoms; and the aryl portions of any of $R^{1'}$ and R^1 through R^4 are optionally substituted with from one to four substituents selected from the group consisting of halogen, cyano, carboxy, sulfo, hydroxy, amino, mono- or di (C_1-C_6) alkylamino, (C_1-C_6) alkyl, (C_1-C_6) alkylthio and (C_1-C_6) alkoxy; optionally, R^2 taken together with R^3 form a fused aromatic or heteroaromatic ring that is optionally substituted with from one to four substituents selected from halogen cyano, carboxy, sulfo, hydroxy, amino, mono- or di (C_1-C_6) alkylamino, (C_1-C_6) alkyl, (C_1-C_6) alkylthio and (C_1-C_6) alkoxy; and tautomeric forms thereof; and

the wavy line indicates the point of attachment to said oligonucleotide or a linking group joining said oligonucleotide to said dye.

54. (Withdrawn) An oligonucleotide probe in accordance with claim 53, wherein said 5,6-dichlorofluorescein is selected from the group consisting of:



55. (Withdrawn) An oligonucleotide probe in accordance with claim 53, further comprising an attached quencher.

56. (Withdrawn) An oligonucleotide probe in accordance with claim 53, further comprising an attached minor groove binder.

57. (Withdrawn) An oligonucleotide probe in accordance with claim 53, further comprising an attached quencher and a minor groove binder, wherein said dye is attached at the

3'-end of said oligonucleotide probe and said quencher and said minor groove binder are attached at the 5'-end of said oligonucleotide probe.

58. (Withdrawn) An oligonucleotide probe in accordance with claim **53**, further comprising an attached quencher and a minor groove binder, wherein said dye is attached at the 5'-end of said oligonucleotide probe and said quencher and said minor groove binder are attached at the 3'-end of said oligonucleotide probe.